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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/068,273

02/07/2002

Aravind Padmanabhan

H19 02237 US

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EXAMINER

VO, HAI

ART UNIT

PAPER NUMBER

1771

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,273

Applicant(s)

PADMANABHAN ET AL.

Examiner

Hai Vo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 18-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 45-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0905. 6) ☐ Other:

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-17, 45-49 in the amendment received on 08/08/2003 is acknowledged. The traversal is on the ground(s) that there is no undue burden on the Examiner to search both the product claim and the method claims in this present application. This is not found persuasive because a search of Group I would not include the search for Group II.

The restriction requirement is deemed proper and is therefore made FINAL.

2. The examiner absolutely agrees that Applicants reserve their right to request rejoinder of method claims with the product claims upon indication of the product claims as being allowable. See *In re Ochiai* 37 USPQ2d 1127.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in–

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-12, 15 and 16 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Zakhidov et al (US 6,261,469). Zakhidov discloses a photonic crystal comprising a three-dimensionally periodic microporous structural matrix of interconnecting, crystallographically oriented, monodispersed members having voids between adjacent members, and members having randomly nanoporous surface porosity (figure 9). The photonic crystal composed of 250 nm SiO₂ spheres (column 28, lines 51-52). With regard to claim 4, Zakhidov discloses the members comprise surfaces or interfaces that are inverse replicas of the surface of a monodispersed sphere array, wherein necks exists between neighboring spheres in the sphere array and the average sphere diameter is from 20 nm to 100 nm (column 4, lines 20-25). With regard to claim 5, Zakhidov discloses the nanoporous surface porosity comprising nanopores having an average pore diameter of from 0.4 to 1 nm (column 4, lines 55-57). With regard to claims 6-10, Zakhidov reads on the claim limitations (column 25, lines 18-27, and column 27, lines 65 et seq.) With regard to claims 11 and 12, Zakhidov teaches the photonic crystal disposed on a surface of a silicon substrate (column 23, lines 21-24, column 25, line 20). With regard to claims 15, 16, Zakhidov discloses the article useful as a piezoelectric

sensor (abstract). Zakhidov does not specifically ^{Teach} the light emitting photonic crystal. However, Applicants state that the nanoporosity is responsible for the emission of light while the periodic microporosity of the photonic crystal structure will control the propagation of the emitted photons (page 11 of the amendment received on 08/08/2003). It appears that the photonic crystal of Zakhidov comprises nanopores having an average pore diameter of from 4 to 10 angstroms to nm (column 4, lines 55-57). It is not seen that the photonic crystal of Zakhidov would have performed differently from that of the present invention. Likewise, the light emitting would be inherently present. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete (Note discussion found in Ex parte Slob, 157 USPQ 172). Further, Applicants argued that Zakhidov does not describe a light emitting or light transmitting structure which is provided with a randomly nanoporous surface porosity superimposed on the microporosity as describe in step (e). The arguments are not commensurate in scope with the claims. Nothing specific about the processing step to produce a randomly nanoporous surface porosity superimposed on the microporosity has been included in the claims. Again, the photonic crystal of Zakhidov is not structurally different than the structure disclosed by Applicants as Zakhidov teaches spheres having diameter of 20 to 100 microns and pores diameter of 4 to 10 angstroms (column 4, lines 55-57).

6. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhidov et al (US 6,261,469) as applied to claim 1, in view of Russell et al

- (US 6,093,941) substantially as set forth in the Office Action mailed on 03/06/2003.
7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhidov et al (US 6,261,469) as applied to claim 1, in view of Koops (US 6,064,506) substantially as set forth in the Office Action mailed on 03/06/2003.
 8. Claims 45, 46, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhidov et al (US 6,261,469) in view of Jewell (US 5,617,445) substantially as set forth in the Office Action mailed on 03/06/2003.
 9. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhidov et al (US 6,261,469) and Jewell (US 5,617,445) as applied to claim 45 above, further in view of Koyama et al (US 6,462,356) substantially as set forth in the Office Action mailed on 03/06/2003.
 10. Claims 1-3, and 6 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ichimura et al (US 6,456,416) substantially as set forth in the Office Action mailed on 03/06/2003.

Response to Arguments

11. The 102 art rejections over Zakhidov are withdrawn in view of the present amendments.
12. Applicant's arguments with respect to claims 1-12, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.
13. The 103 art rejections over Zakhidov in view of Russell, Koops, Jewell and Koyama and the 102/103 art rejections over Ichimura have been maintained for

the same reasons set forth in the paragraph no. 5, which are believed to be pertinent.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (703) 605-4426. The examiner can normally be reached on M,T,Th, F, 8:30-6:00 and on alternating Wednesdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (703) 308-2414. The

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fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

HV


TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700